

SIDRA SMART IDENTIFICATION AND DETECTION OF RADIOACTIVE ANOMALIES



indra



Agencia Tributaria



POLITECNICO DI MILANO



DIPARTIMENTO DI ENERGIA



INTRODUCTION

- SIDRA is an R&D project financed aimed at the improvement of the throughput and sensitivity of Radiation Portal Monitors (RPMs) at the Maritime Ports and Borders
- RPMs are being installed to prevent the illicit traffic of radioactive materials.
- 100% of the cargo are scanned looking for radioactive materials inside containers

INTRODUCTION

- SIDRA is financed by the DG Justice, Freedom and Security through the programme ISEC
- Duration: 24 months (end December 2014)
- Partners:
 - Indra (leader)
 - Spanish Customs
 - Port of Valencia
 - Polytechnic University of Milan
 - Polytechnic University of Madrid
 - University of León

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INDRA

The premier Consulting and Technology company in Spain and a leading multinational in Europe and Latam

Own solutions and technology

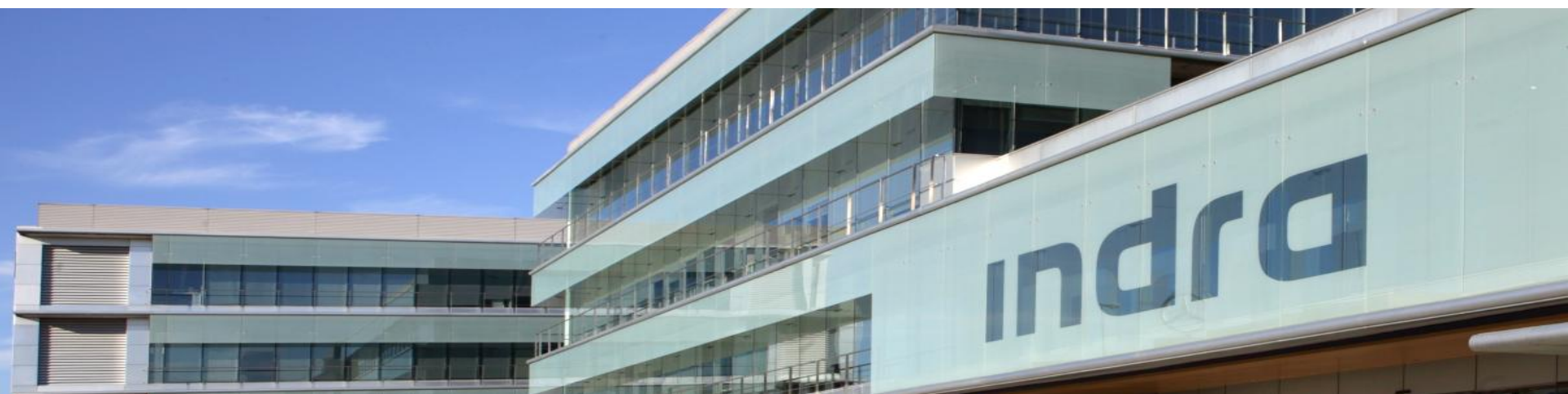
R+D+i: 6%-8% revenues

Differential business model based on **Innovation**

Revenues: M3,000€

42,000 professionals

128 countries



PARTNERS



- Spanish Customs:
 - Actively engaged in the control of the illicit trafficking of radioactive materials.
 - RPMs installed in 7 ports in Spain
- Por of Valencia:
 - > 4 M TEU
 - 100% of the vehicles entering or leaving the port are being monitored
- Universities:
 - Polytechnic of Madrid: Experts in Radiation Portal Monitors
 - Polytechnic of Milano: Experts in Radiation Portal Monitors
 - University of León: Experts in Artificial Intelligence Techniques

IDENTIFIED GAPS

- When the system detects abnormal levels a protocol is launched
 - Second inspection at the same radiation portal monitor
 - Inspection at a second lane RPM
 - Search and identification with a hand held device
- Over 99% of the alarms are innocent, :
 - Ceramic.
 - Fruits.
 - Fertilizers.
- Most RPMs installed are based upon Polyvinyl Toluene
 - Cost efficient detection
 - Low energy resolution
 - Not able to discriminate alarms

IDENTIFIED GAPS

- Innocent alarms impact the operations at the port:
 - Delays
 - Increased
 - Lost of confidence in the system
- This may lead to:
 - Lost of attention of the operators
 - Increasing the alarm threshold
 - Lower detection capability



SIDRA'S APPROACH

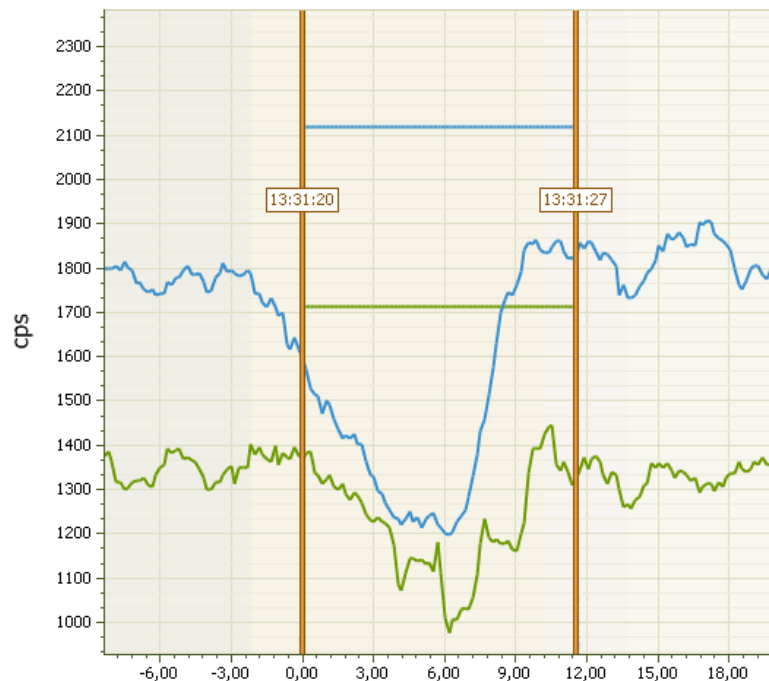
- To optimize the specificity of the alarms and thus reduce the costs by means of:
 - Time evolution of the alarms
 - Artificial intelligence
 - Integration of external information
- Decision support tool



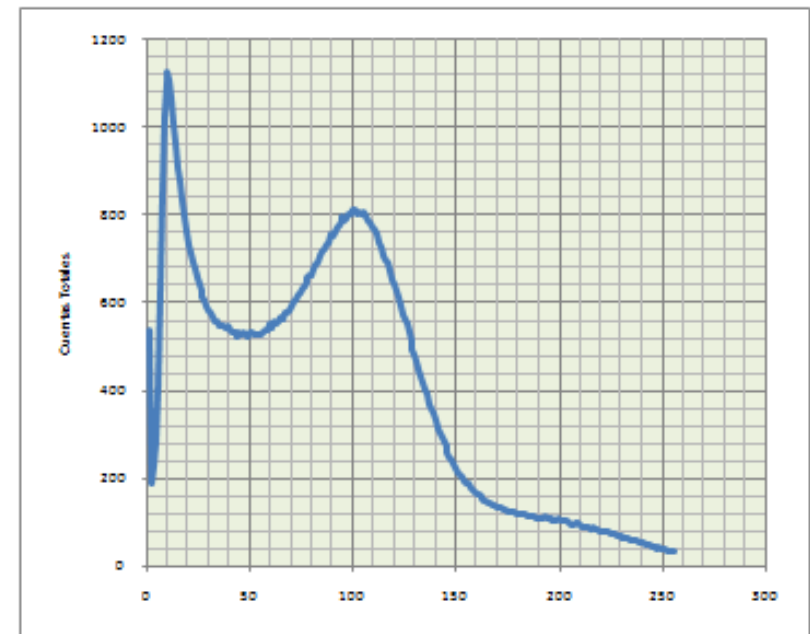
MEASUREMENTS ANALYSIS

- Recent researches can provide a classification of materials through the spectrum obtained with PVT detectors.
- It doesn't identify the isotope but it allows to classify materials. It's based on the analysis of spectral zones rather than highly localized peaks.

■ Time



■ Energy

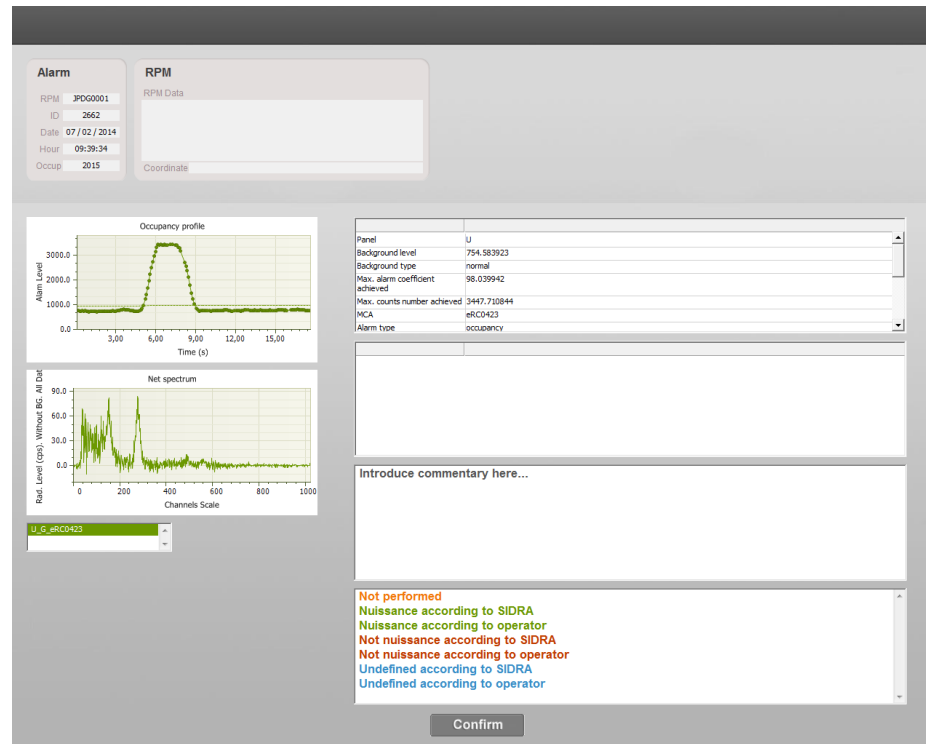


INTEGRATION OF INFORMATION

- Preclassification of containers
 - Container code
 - Exporter
 - Cargo
 - Driver
- Cross check of alarms with stored data of its group
 - Reduces the number of innocent alarms
 - Allows the reduction of the alarm threshold
 - Reduces operating times

DECISION SUPPORT TOOL

- A **complete solution** able to:
 - **Analyze** all data of a freight
 - **Support** for decisions
 - **Enhance** analysis





indra

Fernando Aller Sánchez

Homeland Security

faller@indra.es

C/ Moisés de León 57, 4th Floor

24006 León,

León Spain

T +34 987 849 888

F +34 987 849 904

www.indracompany.com

[SIDRA EN](#)

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